

Amendments to the Claims:

This listing of claims replaces all prior versions and listings:

Listing of Claims:

1. (Previously Presented) A machine-based method for use in processing a digital image that includes first and second regions, the method comprising:  
estimating an intrinsic color of a given pixel located in an area of interest that is adjacent to at least one of the first and second regions, the estimating comprises extrapolating from colors of multiple pixels in one of the first and second regions and multiple pixels in the other of the two regions, and  
storing the intrinsic color of the pixel for later use.
2. (Previously Presented) The method of claim 1 in which the given pixel has an original color that relates to the original colors of pixels in both the first and second regions, and the estimated intrinsic color of the given pixel relates to original colors in only one or the other of the first and second regions.
3. (Previously Presented) The method of claim 1 in which the area of interest includes one of the first and second regions.
4. (Previously Presented) The method of claim 1 in which the area of interest is adjacent to both of the first and second regions.
5. (Previously Presented) The method of claim 1 in which the first region comprises a foreground object and the second region comprises a background.

6. (Previously Presented) The method of claim 1 in which the first and second regions may have any arbitrary degree of color variation in the visible spectrum over a spatial scale that is on the same order of magnitude or smaller than the minimum span of the area of interest.

7. (Previously Presented) The method of claim 1 in which the estimating comprises analyzing both the color and spatial proximity of pixels in the first and second regions.

8. (Previously Presented) The method of claim 1 in which the estimating comprises extrapolating from the closest pixels in the first and second regions.

9. (Previously Presented) The method of claim 1 in which the estimating comprises flowing colors into the area of interest from one or both of the first and second regions.

10. (Previously Presented) The method of claim 9 in which the flowing of colors comprises averaging of color values for each of a set of pixels in the first region and a set of pixels in the second region.

11. (Previously Presented) The method of claim 1 in which the digital image comprises layers of pixel information and the estimating is based on pixel information in only one of the layers.

12. (Previously Presented) The method of claim 1 in which the digital image comprises layers of pixel information and the estimating is based on pixel information in a composition of all the layers.

13. (Previously Presented) The method of claim 1 further comprising determining an opacity value for the given pixel, indicative of the extent to which the intrinsic color of the given

pixel relates to original colors in the first and second regions, based on a result of the estimating of the intrinsic color.

14. (Previously Presented) The method of claim 13 in which the given pixel includes original opacity information, and the opacity value is also based on the original opacity information.

15. (Previously Presented) The method of claim 13 further comprising determining opacity values for other pixels that have intrinsic colors that relate to original colors in the first and second regions.

16. (Previously Presented) The method of claim 13 in which the opacity determination comprises use of a neural network trained on the image original colors and estimated intrinsic colors.

17. (Previously Presented) The method of claim 13 further comprising using the opacity value to composite one of the first and second regions with another digital image.

18. (Previously Presented) The method of claim 1 in which the estimating also includes extrapolating estimates of intrinsic colors of the first and second regions using searches in color space and image coordinate space.

19. (Previously Presented) The method of claim 1 in which the estimating assumes a linear blending model.

20. (Previously Presented) The method of claim 1 in which the estimating includes flowing colors from edges of the area of interest to fill the area of interest with estimates of the colors of the first and second regions.

21. (Previously Presented) The method of claim 1 further comprising extracting from the digital image the intrinsic colors of the given pixel and of other pixels that have intrinsic colors that relate to original colors in the first region or second region.

22. (Previously Presented) The method of claim 21 further comprising using the extracted intrinsic colors to composite the first region or the second region with another digital image.

23. (Previously Presented) The method of claim 1 further comprising receiving from an interactive user interface information that identifies the area of interest.

24. (Previously Presented) The method of claim 1 in which estimating the intrinsic color comprises  
determining two color sample sets for the given pixel, each of the color sample sets being associated with one of the first and second regions, and  
estimating the intrinsic color based on the two color sample sets.

25. (Previously Presented) The method of claim 24 in which estimating the intrinsic color comprises comparing the original color of the given pixel with colors in the color sample sets.

26. (Previously Presented) The method of claim 24 further comprising  
determining an opacity for the given pixel indicative of the extent to which the intrinsic color of the given pixel relates to original colors in both of the first and second regions, where the determination of opacity includes comparing the original color of the given pixel with colors in the color sample sets.

27. (Previously Presented) The method of claim 26 in which the given pixel includes original opacity information and the determination of opacity is also based on the original opacity information.

28. (Previously Presented) The method of claim 24 in which the color sample sets are derived from colors of pixels in the first and second regions.

29. (Previously Presented) The method of claim 24 in which a single color is selected from each of the color sample sets based on an error minimization technique.

30. (Previously Presented) The method of claim 1 in which the intrinsic colors of all of the pixels in the area of interest are determined automatically.

31 – 54. (Cancelled).

55. (Previously Presented) A medium bearing a computer program capable of controlling a computer to process a digital image that includes first and second regions by:  
estimating an intrinsic color of a given pixel located in an area of interest that is adjacent to at least one of the first and second regions, the estimating comprises extrapolating from colors of multiple pixels in one of the first and second regions and multiple pixels in the other of the two regions, and  
storing the intrinsic color of the pixel for later use.

56. - 57. (Cancelled).

58. (Previously Presented) A system for use in processing a digital image that includes first and second regions, the system comprising:

means for estimating an intrinsic color of a given pixel located in an area of interest that is adjacent to at least one of the first and second regions, the estimating comprises extrapolating from colors of multiple pixels in one of the first and second regions and multiple pixels in the other of the two regions, and

means for storing the intrinsic color of the pixel for later use.

59. - 60. (Cancelled)

61. (New) The medium of claim 55 in which the given pixel has an original color that relates to the original colors of pixels in both the first and second regions, and the estimated intrinsic color of the given pixel relates to original colors in only one or the other of the first and second regions.

62. (New) The medium of claim 55 in which the area of interest includes one of the first and second regions.

63. (New) The medium of claim 55 in which the area of interest is adjacent to both of the first and second regions.

64. (New) The medium of claim 55 in which the first region comprises a foreground object and the second region comprises a background.

65. (New) The medium of claim 55 in which the first and second regions may have any arbitrary degree of color variation in the visible spectrum over a spatial scale that is on the same order of magnitude or smaller than the minimum span of the area of interest.

66. (New) The medium of claim 55 in which the estimating comprises analyzing both the color and spatial proximity of pixels in the first and second regions.

67. (New) The medium of claim 55 in which the estimating comprises extrapolating from the closest pixels in the first and second regions.

68. (New) The medium of claim 55 in which the estimating comprises flowing colors into the area of interest from one or both of the first and second regions.

69. (New) The medium of claim 68 in which the flowing of colors comprises averaging of color values for each of a set of pixels in the first region and a set of pixels in the second region.

70. (New) The medium of claim 55 in which the digital image comprises layers of pixel information and the estimating is based on pixel information in only one of the layers.

71. (New) The medium of claim 55 in which the digital image comprises layers of pixel information and the estimating is based on pixel information in a composition of all the layers.

72. (New) The medium of claim 55 in which the computer program is capable of controlling the computer to process the digital image by determining an opacity value for the given pixel, indicative of the extent to which the intrinsic color of the given pixel relates to original colors in the first and second regions, based on a result of the estimating of the intrinsic color.

73. (New) The medium of claim 72 in which the given pixel includes original opacity information, and the opacity value is also based on the original opacity information.

74. (New) The medium of claim 72 in which the computer program is capable of controlling the computer to process the digital image by determining opacity values for other pixels that have intrinsic colors that relate to original colors in the first and second regions.

75. (New) The medium of claim 72 in which the opacity determination comprises use of a neural network trained on the image original colors and estimated intrinsic colors.

76. (New) The medium of claim 72 in which the computer program is capable of controlling the computer to process the digital image by using the opacity value to composite one of the first and second regions with another digital image.

77. (New) The medium of claim 55 in which the estimating also includes extrapolating estimates of intrinsic colors of the first and second regions using searches in color space and image coordinate space.

78. (New) The medium of claim 55 in which the estimating assumes a linear blending model.

79. (New) The medium of claim 55 in which the estimating includes flowing colors from edges of the area of interest to fill the area of interest with estimates of the colors of the first and second regions.

80. (New) The medium of claim 55 in which the computer program is capable of controlling the computer to process the digital image by extracting from the digital image the intrinsic colors of the given pixel and of other pixels that have intrinsic colors that relate to original colors in the first region or second region.



81. (New) The medium of claim 80 in which the computer program is capable of controlling the computer to process the digital image by using the extracted intrinsic colors to composite the first region or the second region with another digital image.

82. (New) The medium of claim 55 in which the computer program is capable of controlling the computer to process the digital image by receiving from an interactive user interface information that identifies the area of interest.

83. (New) The medium of claim 55 in which estimating the intrinsic color comprises determining two color sample sets for the given pixel, each of the color sample sets being associated with one of the first and second regions, and  
estimating the intrinsic color based on the two color sample sets.

84. (New) The medium of claim 83 in which estimating the intrinsic color comprises comparing the original color of the given pixel with colors in the color sample sets.

85. (New) The medium of claim 83 in which the computer program is capable of controlling the computer to process the digital image by determining an opacity for the given pixel indicative of the extent to which the intrinsic color of the given pixel relates to original colors in both of the first and second regions, where the determination of opacity includes comparing the original color of the given pixel with colors in the color sample sets.

86. (New) The medium of claim 85 in which the given pixel includes original opacity information and the determination of opacity is also based on the original opacity information.

87. (New) The medium of claim 83 in which the color sample sets are derived from colors of pixels in the first and second regions.

88. (New) The medium of claim 83 in which a single color is selected from each of the color sample sets based on an error minimization technique.

89. (New) The medium of claim 55 in which the intrinsic colors of all of the pixels in the area of interest are determined automatically.

90. (New) The system of claim 58 in which the given pixel has an original color that relates to the original colors of pixels in both the first and second regions, and the estimated intrinsic color of the given pixel relates to original colors in only one or the other of the first and second regions.

91. (New) The system of claim 58 in which the area of interest includes one of the first and second regions.

92. (New) The system of claim 58 in which the area of interest is adjacent to both of the first and second regions.

93. (New) The system of claim 58 in which the first region comprises a foreground object and the second region comprises a background.

94. (New) The system of claim 58 in which the first and second regions may have any arbitrary degree of color variation in the visible spectrum over a spatial scale that is on the same order of magnitude or smaller than the minimum span of the area of interest.

95. (New) The system of claim 58 in which the estimating comprises analyzing both the color and spatial proximity of pixels in the first and second regions.

96. (New) The system of claim 58 in which the estimating comprises extrapolating from the closest pixels in the first and second regions.

97. (New) The system of claim 58 in which the estimating comprises flowing colors into the area of interest from one or both of the first and second regions.

98. (New) The system of claim 97 in which the flowing of colors comprises averaging of color values for each of a set of pixels in the first region and a set of pixels in the second region.

99. (New) The system of claim 58 in which the digital image comprises layers of pixel information and the estimating is based on pixel information in only one of the layers.

100. (New) The system of claim 58 in which the digital image comprises layers of pixel information and the estimating is based on pixel information in a composition of all the layers.

101. (New) The system of claim 58 comprising means for determining an opacity value for the given pixel, indicative of the extent to which the intrinsic color of the given pixel relates to original colors in the first and second regions, based on a result of the estimating of the intrinsic color.

102. (New) The system of claim 101 in which the given pixel includes original opacity information, and the opacity value is also based on the original opacity information.

103. (New) The system of claim 101 comprising means for determining opacity values for other pixels that have intrinsic colors that relate to original colors in the first and second regions.

104. (New) The system of claim 101 in which the opacity determination comprises use of a neural network trained on the image original colors and estimated intrinsic colors.

105. (New) The system of claim 101 comprising means for using the opacity value to composite one of the first and second regions with another digital image.

106. (New) The system of claim 58 in which the estimating also includes extrapolating estimates of intrinsic colors of the first and second regions using searches in color space and image coordinate space.

107. (New) The system of claim 58 in which the estimating assumes a linear blending model.

108. (New) The system of claim 58 in which the estimating includes flowing colors from edges of the area of interest to fill the area of interest with estimates of the colors of the first and second regions.

109. (New) The system of claim 58 comprising means for extracting from the digital image the intrinsic colors of the given pixel and of other pixels that have intrinsic colors that relate to original colors in the first region or second region.

110. (New) The system of claim 109 comprising means for using the extracted intrinsic colors to composite the first region or the second region with another digital image.

111. (New) The system of claim 58 comprising means for receiving from an interactive user interface information that identifies the area of interest.

112. (New) The system of claim 58 in which estimating the intrinsic color comprises determining two color sample sets for the given pixel, each of the color sample sets being associated with one of the first and second regions, and estimating the intrinsic color based on the two color sample sets.

113. (New) The system of claim 112 in which estimating the intrinsic color comprises comparing the original color of the given pixel with colors in the color sample sets.

114. (New) The system of claim 112 comprising means for determining an opacity for the given pixel indicative of the extent to which the intrinsic color of the given pixel relates to original colors in both of the first and second regions, where the determination of opacity includes comparing the original color of the given pixel with colors in the color sample sets.

115. (New) The system of claim 114 in which the given pixel includes original opacity information and the determination of opacity is also based on the original opacity information.

116. (New) The system of claim 112 in which the color sample sets are derived from colors of pixels in the first and second regions.

117. (New) The system of claim 112 in which a single color is selected from each of the color sample sets based on an error minimization technique.

118. (New) The system of claim 58 in which the intrinsic colors of all of the pixels in the area of interest are determined automatically.